United States Department of Agriculture
Forest Service
Stanislaus National Forest
19777 Greenley Road
Sonora, CA 95370-5909

35.88238 -118.58596

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Subject: Winter Injury SYmptoms in Stormy Burn Plantations (FPM Report No. C96-6)

To: Lew Jump, Sequoia National Forest -SO

On July 17, 1996, Forest Pest Management (FPM) entomologist, John Wenz and I joined personnel from the Sequoia National Forest to examine seedlings planted within the Stormy Fire. The request for FPM input was initiated by George Powell from the Hot Springs RD. Jeffrey pine seedlings and some pole-size pines that survived the fire were examined at 4 sites in the vicinity of Dry Meadow. At question was a specific discoloration of pine foliage seen during previous inspections of plantation trees. Forest personnel wanted to know the cause of the discoloration, and whether it represented any threat to seedling health or survival.

The same condition was found at all locations. Upper surfaces of most foliage showed tan spots with sharp but irregular boundaries. This discoloration is called weather fleck or necrotic fleck and is a type of winter injury. The flecks are caused by exposure to snow and low temperatures, but have not been shown to affect tree health.

Weather fleck is commonly mistaken for injury due to ozone air pollution. The symptom on needles caused by ozone is called "chlorotic mottle". When training field crews to distinguish between these two agents, we use the following criteria:

CHARACTERISTIC	OZONE	WEATHER FLECK
Color of spots	Light yellow	Tan
Margin of spots	Diffuse	Sharp
Needle part affected	Inside needle	Needle surface
Needles affected	Oldest whorl	All whorls except current year
Surface affected	All surfaces	Surface of needle facing up

FPM maintains a network of 26 ozone injury monitoring plots on the Sequoia NF which are evaluated every two years. The worst injury is found at lower

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elevation plots (at 6000 feet or below) on west-side slopes. Weather fleck, on the other hand, is more common and severe at higher elevations.

No significant insect-related mortality or damage was observed in the plantations. Minor levels of foliage injury due to adult feeding by the weevil Scythropus sp. (Coleoptera: Curculionidae) and the scarab beetle Dichelonyx sp. (Coleoptera: Scarabaeidae) was evident on several seedlings. In addition, very low numbers of the the pine needle scale, Chionaspis pinifoliae (Homoptera: Diaspididae) were present on the needles of several pine scattered through the plantations.

For additional information regarding weather fleck, ozone injury, or insect pests, contact the FPM Service Area office in Sonora at (209) 532-3671.

John Pronos

JOHN PRONOS
Plant Pathologist